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ABSTRACT

This environmental education resource activity kit provides an open-ended structure for fifth- and sixth-grade pupils to pursue the study of environmental topics and problems. The design of the kit concentrates on nine types of learning activities (called encounter activities) to enable pupils to learn about the natural resources, the biophysical environment, and the cause-effect relationships in the environment. The encounter activities provide diversified learning modes in addition to various strategies that involve social, scientific, political, legal, economic and managerial skills and knowledge. Each of the encounter activities--library research, field research, investigations, environmental projects, surveys of environmental problems, social awareness, environmental political action, environmental action groups, and careers related to the environment--has numerous activity cards which in most cases suggest an environmental topic and a problem to study. Environmental encounter activity contracts provide guidance and direction for the pupil's study. Contract evaluation forms also accompany the contracts. This kit contains the procedures for the use of the activity cards, the contracts, the contract evaluation forms, and all needed materials. (TK)

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AN ENVIRONMENTAL EDUCATION RESOURCE ACTIVITY KIT

FOR FIFTH AND SIXTH GRADE PUPILS

by

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1973

SE 017 747

PROCEDURES FOR UTILIZING THE ENVIRONMENTAL EDUCATION RESOURCE ACTIVITY KIT

The Environmental Education Resource Activity Kit provides an open-ended structure for fifth and sixth grade pupils to pursue the study of environmental topics and problems. The design of the kit concentrates on nine types of learning activities (called encounter activities) to enable pupils to learn about the natural resources, the biophysical environment, and the cause-effect relationships in the environment. The encounter activities provide diversified learning modes in addition to various strategies that involve social, scientific, political, legal, economic, and managerial skills and knowledge. Most of the encounters involve research reading, but audio-visual materials could be readily interchanged for printed materials to accomodate learners with reading difficulties. Learning materials to be used in the program come from a variety of sources. In addition to audio-visual materials, trade books, pamphlets, booklets, or other items in small quantities can be collected by teachers or supplied through the IMC (Instructional Material Center).

ENVIRONMENTAL ENCOUNTER ACTIVITY CARDS

Each of the encounter activities has numerous activity cards to involve the learner in primary learning experiences. The activity cards in most encounters suggest an environmental topic and a problem to study. Different colored activity cards are used for the nine types of encounters.

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ENVIRONMENTAL ENCOUNTER ACTIVITY CONTRACTS

Specific encounter contracts are color correlated with the different activity cards for easy examination and useage of the kit. The contract provides guidance and direction for the pupil's study or experiences. Each encounter contract is signed by both the teacher and the pupil after the learner has discussed and selected: 1) a topic of interest, 2) a problem to research, and 3) has developed a plan for the study. A period of time to complete the contract is also agreed to so that individuals may work at a comfortable rate.

ENVIRONMENTAL CONTRACT EVALUATION FORMS

Contract evaluation forms are of three types: 1) pupil self-evaluation of performance and the teacher's evaluation of effort and quality of work produced in relationship to the child's ability, 2) an assisting parent's evaluation of his child's learning activity, and 3) a community representative's evaluation of the activity and performance of the children. An assumption inherent to the encounter contract is: Teacher acceptance of a contract indicates the study has been completed according to standards agreed upon between the teacher and pupil and the study reflects concepts and knowledge attained by the learner.

The environmental studies can be conducted on an individual basis, by learning pairs, small groups, or large group instruction. The learner works at his own pace.

PROCEDURES FOR IMPLEMENTING THE PROGRAM

The environmental education kit could be utilized for study and

use by pupils in a variety of manners. Teachers should view the following as examples and modify any of them or create different combinations to meet the needs of their pupils.

Pupil Selects Encounters and Topics

One suggestion is to allow pupils to investigate the possible encounters and then select an encounter card of interest from any of the nine categories. A specific number of contracts could be required of each child within a teaching period as determined by teacher judgment of the child's ability. A pupil using this procedure may select various topics, such as water pollution, ecosystems, and soil, to name a few. Some educators today feel that children will select a well balanced program to meet their individual needs and interests. An alternate idea involves the teacher pre-planning and selecting cards for individuals or small groups to study.

Specific Learning Mode Encounters

Another suggestion is to allow each child to select cards in only one or two of the nine encounter categories to accomodate his best learning style. This procedure could be determined by either the teacher's judgment of a pupil's learning style or the pupil's self selected learning style. With this procedure, a pupil may conduct several studies of environmental topics within one type of encounter. An example might be the Field Research Encounter for which the pupil might select animal habits, erosion, and sewage treatment, while another pursues the Survey Encounter and selects or is assigned recycling, water conservation, and pesticides.

Specific Topic in all of the Nine Encounters

A third proposal suggests that pupils could select or be assigned a single topic of interest and utilize all nine of the encounter styles. This would involve the learner in a comprehensive research, study, and analysis of a specific topic. An example of a topic that could be studied with all its related aspects is water. The pupil would then be involved in the completion of contracts in 1) library research of water as a natural resource, 2) a field visit to a water treatment plant, 3) experiments and investigations concerning pollution of water, 4) a project involving the construction of a model of the hydrologic cycle, 5) a survey to determine habits of wasting water in the home, 6) a review of advertisements to find examples that reflect environmental concern and awareness, 7) a research of legislation to learn what standards and regulations were added in the 1970 Amendments to the Water Pollution Act, 8) discovery of efforts and achievements by an agency to maintain clear water supplies, and 9) an interview with a person in an environmental career connected with water management and control.

Some Assigned Encounters and Some Pupil Selected Encounters

A fourth suggested procedure is to require a certain number of encounters like library research, experiments, and social awareness as the minimum for modes of study. A student option of three of the other six encounters would provide some self selection. The teacher could establish the number of contracts in each encounter the child is required to complete.

With any plan, teacher guidance and direction is necessary

whether working with individuals, small groups, or a classroom size group. It may be desirable to introduce environmental studies with an introductory film, a news article with environmental impact, or a game activity such as Man In His Environment[1] produced by the Coca Cola Company. Throughout the environmental education program, group presentations or activities can be devised to enable learners to transfer and relate their knowledge and skills. Periodic sharing of completed environmental contracts by the pupils in the classroom, will also promote interaction and sharing among the pupils.

DIRECTIONS FOR USING ENCOUNTER ACTIVITIES AND CONTRACTS

A description of how each of the nine encounter activities and contracts can be used in the program follows:

1. Environmental Encounters - Library Research

   The learner will research a selected topic as found on an encounter activity card to obtain information from one or more sources and write a report concerning a particular problem related to the selected topic. The learner may elect to use trade books, pamphlets, or other suitable reading materials. He may prefer to utilize available films, filmstrips, listening tapes, or other materials to study the problem. He may, of course, use the sources in any combination for his study.

2. Environmental Encounters - Field Research

   Field research in rural and urban areas provide opportunities for pupils to select environmental topics and study specific problems or issues by firsthand observations and visits in the natural, social, and man-made environment. Some of the activities might be accomplished in a single experience, while others might be continued for a period of time. Completion of the contracts requires a listing of the data gathered, a summary, and a conclusion or prediction resulting from the experience.

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[1] Man in His Environment, A Classroom Ecology Kit. Coca-Cola Company, 1970.

3. Environmental Encounters - Experiments and Investigations

Topics in this category suggest problems that could be investigated as classroom science laboratory experiments. Some activities could be performed in the learner's home. Other investigations might be conducted in the community or with the assistance of community representatives. The activity card contains all the necessary information. In some cases, adult assistance is required and is so stated on the card. A source reference is included for referral should the need arise. Teachers or pupils may design experiment or investigation cards to be included in the kit. A write up of procedures, findings, and a conclusion completes the contract.

4. Environmental Encounters - Projects

Project activities focus on a topic and designate a problem to solve. The learner would obtain information and knowledge for the project with library sources. Numerous types of projects are possible and can be selected by the learner according to his interest, abilities, or talents. Suggestions include construction of charts, dioramas, models, murals, bulletin boards, and shadow boxes. Other projects might involve collecting and identifying or classifying items. Some projects might result in compiling a booklet or scrapbook of pictures, drawings, writings, and other activities. Snapshot pictures, slides, or movies are other possibilities in the field of photography that could be utilized as a project to study environmental topics.

5. Environmental Encounters - Surveys

These encounter cards furnish possible topics and problems that could lead pupils to learn how individuals or groups respond to current issues. The surveys could be conducted by several different methods. Pre-planned personal interviews with individuals permit firsthand experiences of opinions and reactions to environmental issues, and if combined with those of other learners, provide opportunities for analysis and comparison to gain understanding of how community members view their environment. Another survey method is a sampling of available commercial products harmful to the environment, or those that are more harmonious with the environment. Sampling techniques are possible to use with other environmental concerns, too. A third type of survey is a questionnaire to learn people's attitudes, values, beliefs, or behaviors. Data collected from surveys can be organized in some manner, such as a chart or graph. A summary or conclusion results from the pupil's interpretations of his data.

6. Environmental Encounters - Social Awareness

To help the learner understand how and to what extent a nation's citizens are made aware of environmental concerns, problems, and the possible solutions, this encounter brings the pupil in contact with the various types of communication media. Pupils could review published sources such as newspapers and periodicals for articles pertinent to environmental topics and problems. They could review television and radio programs over a period of time to determine trends of interest and concern in a community, region, or the nation. Another reflection of social awareness may be indicated through a survey of billboards depicting environmental concerns. Various kinds of advertisements could be studied to learn if this is a technique to promote products harmonious with the environment.

7. Environmental Encounters - Political Actions

Specific topics and problems of significance, such as air or water pollution might be the impetus for research of legislation through letter writing, library research, or talks delivered by knowledgeable resource persons. Other possibilities may be to determine the position a community, a state, or a national representative assumes on topics or problems related to the environmental welfare and management. This contract requires a summary of facts and a interpretation to determine the implications for the environment.

8. Environmental Encounters - Action Agencies

These cards list the name of an environmental group, their address, and the titles of their publications when known. An environmental action agency could be studied to learn the group's purpose, environmental activities, content of the publications, and accomplishment pertinent to the welfare and management of the environment. Contracts require a written summary of the study. Both private and governmental groups could be explored, either by means of individual pupils writing letters, or study of their printed materials, or the combinations of various methods.

9. Environmental Encounters - Environmental Careers

Environmental careers in both the private sector and governmental agencies could be explored to learn about the types of work available today and possibilities in the future. The activities could involve library research materials, resource people, and other educational materials

such as films. In addition to the environmental impact of these careers, pupils could learn something of the work, the working conditions, and training or education required for various careers.

The design of the Environmental Education Resource Activity Kit allows a great deal of flexibility because it is open-ended. Activity cards can be added or deleted whenever a teacher determines it conducive to improving the kit. Pupils, too, may contribute their ideas and suggestions for problems to study.

Since teachers, classes, schools, and communities differ, each person using an approach as this one must adapt the materials to his individual situation. This may involve using only part of the kit or modifying basic philosophy, such as the proposed mode of evaluation.

SUMMARY

It is impractical to design an environmental education program to be followed by all teachers and all pupils according to specific criteria. Each teacher must utilize his or her own style of teaching and pupils all differ in their intellectual, emotional, and social characteristics. Thus, a program that involves a search for answers to problems from a variety of sources and with a variety of techniques will best achieve the goal of environmental education, and develop citizens who are open minded and make decisions on the merits of evidence for a quality environment.

LIBRARY RESEARCH CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Learner _____ Teacher _____

Group Members _____

TOPIC _____

PROBLEM TO RESEARCH _____

SOURCE OF DATA (include title, kind of source, pages read)
(attach notes to contract)

1. _____
2. _____
3. _____
4. _____
5. _____

SUMMARY REPORT

if needed, continue on another page

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FIELD RESEARCH CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Leader _____ Teacher _____

Group Members _____

TOPIC _____

PROBLEM TO RESEARCH _____

PLAN FOR THE RESEARCH _____

DATA GATHERED _____

SUMMARY OF FINDINGS _____

CONCLUSION OR PREDICTION _____

EXPERIMENT/INVESTIGATION CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Learner _____ Teacher _____

Group Members _____

TOPIC _____

PROBLEM _____

MATERIALS _____

PROCEDURES _____

FINDINGS OR OBSERVATIONS _____

CONCLUSION OR SUMMARY _____

ENVIRONMENTAL PROJECT CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Learner _____ Teacher _____

Group Members _____

TOPIC _____

PROBLEM _____

READING FOR BACKGROUND AND INFORMATION _____

READING SOURCE _____

DESCRIPTION OF PROJECT _____

SKETCH OF PROJECT

SURVEYS CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Learner _____ Teacher _____

Group Members _____

TOPIC _____

PROBLEM _____

PLAN FOR CONDUCTING THE SURVEY _____

DATA COLLECTED _____

SUMMARY OF FINDINGS _____

CONCLUSION _____

SOCIAL AWARENESS CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Learner _____ Teacher _____

Group Members _____

TOPIC _____

PROBLEM _____

_____

TYPE OF COMMUNICATION MEDIA, TITLE, AND DATE _____

_____

MEDIA MESSAGE _____

_____

_____

_____

TYPE OF COMMUNICATION MEDIA, TITLE, AND DATE _____

_____

MEDIA MESSAGE _____

_____

_____

_____

TYPE OF COMMUNICATION MEDIA, TITLE, AND DATE _____

_____

MEDIA MESSAGE _____

_____

_____

_____

YOUR REACTION TO THE EFFECTIVENESS OF THE MESSAGES _____

_____

_____

ENVIRONMENTAL POLITICAL ACTION CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Learner _____ Teacher _____

Group Members _____

TOPIC _____

PROBLEM _____

PLAN FOR THE ACTIVITY _____

FINDINGS _____

ENVIRONMENTAL IMPLICATIONS _____

ENVIRONMENTAL ACTION AGENCIES CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Learner _____ Teacher _____

Group Members _____

NAME OF AGENCY _____

ADDRESS _____

PUBLICATION _____

GROUP'S PURPOSE _____

GROUP'S ACTIVITIES CONCERNING THE ENVIRONMENT _____

GROUP'S ACCOMPLISHMENTS _____

ENVIRONMENTAL CAREERS CONTRACT

I hereby contract to complete the following activity as agreed upon by the date stated.

Date Started _____ Date Due _____

Learner _____ Teacher _____

Group Members _____

TOPIC _____

CAREER TITLE _____

EMPLOYER _____

DESCRIPTION OF WORK _____

TRAINING OR EDUCATION REQUIRED _____

WORKING CONDITIONS _____

CONTRIBUTIONS TO OR INVOLVEMENT WITH THE ENVIRONMENT _____

ENVIRONMENTAL CONTRACT EVALUATION

LEARNER SELF EVALUATION NAME _____

1. Was the activity too easy, too hard, or about right for my ability? _____

2. Was I satisfied and pleased with my work on this contract? _____ Explain. _____

_____

3. What did I do well? _____

_____

4. What could I do better on another contract after this experience? _____

5. Did I have any problems completing this contract such as obtaining materials, help, or etc. _____

_____

6. How I would rate my performance on this contract.

___Poor ___Fair ___Satisfactory ___Good ___Excellent

7. Have I changed an opinion or attitude concerning a high quality environment? _____ Explain _____

_____

TEACHER EVALUATION OF LEARNER'S WORK NAME _____

Effort

____Poor ____Fair ____Satisfactory ___Good ____Excellent

Quality of Work

____Poor ____Fair ____Satisfactory ___Good ____Excellent

Comments: _____

_____

ENVIRONMENTAL CONTRACT EVALUATION

PARENTS OR OTHER ADULT _____

LEARNER _____ TEACHER _____

1. How do you feel about the activity your child was involved with? ___worthwhile ___not worthwhile

   ___important to environmental education ___not important

2. How do you feel about the time needed for your child to complete the contract work?

   ___took very little time ___reasonable amount of time

   ___took too much time

3. Do you think your child has changed in any way as a result of this activity? Explain.

4. How did you help your child with this activity?

5. Could you offer suggestions or other comments to improve the activity?

ENVIRONMENTAL CONTRACT EVALUATION

COMMUNITY ENVIRONMENTAL REPRESENTATIVE

NAME _____

BUSINESS OR AGENCY _____

POSITION _____

1. Do you think this activity is:

   worthwhile for children as a learning activity? ___ yes ___ no

   important to environmental education? ___ yes ___ no

2. Did the child or group have adequate background knowledge to benefit from the experience? ___ yes ___ no

   Suggestions:

3. How could this experience be improved in any aspect for another time?

ENVIRONMENTAL EDUCATION

Living things are interdependent with one another and their environment.

I. Natural resources are interdependent and the use or misuse of one will affect others.

   A. The earth and life on it are greatly affected by the atmosphere.
   B. Water is a reuseable and transient resource, but the available quantity may be reduced or quality impaired.
   C. Mineral conservation involves the utilization of all known methods of using the minerals of the earth's crust that will cause them to serve more people for a longer time.
   D. Maintaining, improving, and in some cases restoring soil productivity is important to the welfare of the people.
   E. Green plants are the ultimate sources of food, clothing, shelter, and energy in most societies.
   F. Wildlife populations are important economically, aesthetically, and biologically.

ENVIRONMENTAL EDUCATION

Living things are interdependent with one another and their environment.

II. Organisms and environments are in constant change.

A. In any environment, one component like space, water, air, or food may become a limiting factor.
B. The interaction of environmental and biological factors determines the size and range of species and populations.
C. An organism is the product of its heredity and environment.
D. Biological systems are described as dynamic because the materials and energy involved are parts of continuous cycles; inorganic materials and energy become part of organic materials and are subsequently broken down into simpler substances and energy as a result of the operation of organic systems.
E. Succession is the gradual and continuous replacement of one kind of plant or animal complex by another and is characterized by gradual changes in species composition.

ENVIRONMENTAL EDUCATION

Living things are interdependent with one another and their environment.

III. Man has the ability to manipulate and change the environment.

A. Man's need for food, fiber, and minerals increases as populations expand and levels of consumption rise.
B. Increasing human populations, rising levels of living, and the resultant demands for greater industrial and agricultural productivity promotes increasing environmental contamination.
C. Safe waste disposal, including the reduction of harmful and cumulative effects of various solids, liquids, gases, radioactive wastes and heat, is important if the well being of man and environment is to be preserved.
D. A variety of institutional structures are involved in planning and managing the environment.

ENCOUNTER ACTIVITY:

TOPIC: Air

PROBLEM: Learn about the layers of the atmosphere and list facts about each layer. In which layer do we live?

ENCOUNTER ACTIVITY:

TOPIC: Air

PROBLEM: Learn about the elements and other substances that are found in air considered to be clean.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Air

PROBLEM: Learn about the process of photosynthesis and explain how it is important to man.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Air Pollution

PROBLEM: Learn how photochemical smog forms and what it is. List some harmful effects from this type of smog.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Air Pollution

PROBLEM: Learn about the possible kinds of visible and invisible pollution in the air, where it comes from, and the effects on people or their environment.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Air Pollution

PROBLEM: Learn about the different types of cars that have been planned or designed to reduce air pollution. List the advantages and disadvantages of each car.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Air Pollution

PROBLEM: Learn about the different types of cars that have been planned or designed to reduce air pollution. List the advantages and disadvantages of each car.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Air Pollution

PROBLEM: Learn about a temperature inversion, how it develops, and the harmful effects that often occur. Include an example of an actual case from history.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Biomes

PROBLEM: Learn about the major types of water biomes. List the characteristics of each biome, including typical plants and animals.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Carbon Cycle

PROBLEM: Learn what the carbon cycle is and how it is important in man's environment.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Biomes

PROBLEM: Learn about the major types of land biomes. List the characteristics of each biome, including typical plants and animals .

ENCOUNTER ACTIVITY: Library Research

TOPIC: Ecosystems

PROBLEM: Explain how plants, animals, and decomposers interact and contribute to each other's welfare in an ecosystem.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Ecosystems

PROBLEM: Learn about the role a predator plays in an ecosystem.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Ecosystems

PROBLEM: Learn about a niche and give several examples to show you understand what it is and tell what part a niche is in the ecosystem.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Environmental Management

PROBLEM: Learn what is meant by biological control and give at least two detailed examples of what has been done to control certain undesirable species of insects.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Erosion

PROBLEM: Learn how many ways running water causes erosion and methods that can be used to control the water and the erosion.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Food chains

PROBLEM: Learn how energy is passed from one organism to another

Library Research of Environmental Topics

ENCOUNTER ACTIVITY: Library Research

TOPIC: Food Web

PROBLEM: Learn what a food web is and how life forms interact in a food web.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Insecticides

PROBLEM: Learn about the various types of insecticides, their uses, and their harmful effects to the environment.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Insecticides

PROBLEM: Learn about the benefits and hazards from using DDT.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Mineral Conservation

PROBLEM: Learn which non-renewable minerals are in limited supply and how their present supply can be conserved by using substitute materials.

ENCOUNTER ACTIVITY:

TOPIC: Minerals

PROBLEM: Learn about five much used minerals, their source location and amount of supply.

Library Research of Environmental Topics

ENCOUNTER ACTIVITY: Library Research

TOPIC: Minerals

PROBLEM: Learn about the basic types of minerals, examples of each type, and some ways that man uses them.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Nitrogen Cycle

PROBLEM: Learn what the nitrogen cycle is and how it is important in man's environment.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Noise Pollution

PROBLEM: Learn the common sources of noise pollution, how it effects man, and what can be done about this form of pollution.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Phosphorus Cycle

PROBLEM: Learn about the phosphorus cycle and how it is important to man's environment.

ENCOUNTER ACTIVITY:

TOPIC: Plants

PROBLEM: Learn how plants contribute to our way of life.

Library Research of Environmental Topics

ENCOUNTER ACTIVITY: Library Research

TOPIC: Plants

PROBLEM: Learn why plants are called producers and how they supply energy.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Population

PROBLEM: Learn about the natural ways animal populations are controlled.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Population

PROBLEM: Learn about human population growth rates in the past, at the present time, and future expectations.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Population

PROBLEM: Learn about the effects of human overpopulation in a region and some ways we can solve the problems from too many people in one place.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Recycling

PROBLEM: Learn how materials can be recycled. List examples of materials that can be recycled and in what way they can be used again.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Soil

PROBLEM: Learn about the characteristics of each type of soil in a soil profile.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Soil

PROBLEM: Learn how irrigation affects the land and causes problems after many years of this practice.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Soil Formation

PROBLEM: Learn how soil is formed by the processes of weathering, plant action, and animal action.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Succession

PROBLEM: Learn what is meant by primary succession and the changes that occur. Give an example such as what happened on the island of Surtsey off the coast of Iceland.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Succession

PROBLEM: Learn what is meant by primary succession and how eutrophication occurs in a pond or lake.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Succession

PROBLEM: Learn what is meant by secondary succession and the changes that might occur in a forest community after a fire.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Waste Disposal

PROBLEM: Learn about some possible solutions for solving the problem of disposing of increasing amounts of wastes.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Water is a Natural Resource

PROBLEM: Learn the various sources of water supplies and some of the important ways man uses water.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Water Pollution

PROBLEM: Learn about thermal pollution, its source, and the harmful effects to the environment.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Water Pollution

PROBLEM: Learn what kinds of problems detergents cause in lakes, rivers, and other sources of water supplies.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Water Pollution

PROBLEM: Learn how phosphate fertilizers cause water pollution and the effects this has the quality of the water.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Water Pollution

PROBLEM: Learn about possible water pollutants, where they come from, and the hazards they present to man and his environment.

ENCOUNTER ACTIVITY:

TOPIC: Wildlife

PROBLEM: Learn how wildlife populations contribute to the earth's welfare.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Wildlife

PROBLEM: Learn how wolves contribute to the balance of nature in wildlife areas.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Wildlife

PROBLEM: Learn about endangered animal species, their habitat location, and possible solutions to protect and preserve them.

ENCOUNTER ACTIVITY: Library Research

TOPIC: Wildlife

PROBLEM: Learn about extinct animal species, their habitat location, and the cause of their extinction.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Air Pollution

PROBLEM: Make three observations of various places at regular time periods to report the visible pollution from chimneys, auto exhausts, or other types of burning.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Air Pollution

PROBLEM: Visit an industrial plant to learn what they are doing to prevent or control air pollution of both visible and invisible pollutants.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Animal Habitats

PROBLEM: Observe and study a squirrel in either a city or rural setting to learn about its home, range of movement, how it spends time, the kinds of food it eats or gathers, and its social encounters with other animals.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Erosion

PROBLEM: Tour, observe, and investigate a specific road or region of your community for signs or evidence of erosion. Make a plan to correct any erosion problem you discovered.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Land Communities

PROBLEM: Observe and study a hedgerow, a farmer's field, or a woodlot to learn the types of plant and animal life living there. Watch for signs of interactions in the community. Look for possible factors that could change the balance of nature in the community.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Litter

PROBLEM: Observe an area near a busy store, factory, or a public gathering and record litter dropped or tossed away by adults in a 30 minute period.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Mineral Mining

PROBLEM: Learn what kinds of minerals are found in our community or state. Visit the site of a mineral deposit to learn how the mineral is mined and what efforts are directed toward renewing the landscape of the mined area.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Mineral Resources

PROBLEM: Visit a community business or industry to learn what kind of resources are used, where they are obtained, and the future availability of supplies.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Plants

PROBLEM: Select a site of a definite size and examine the area for the types of plants growing there. Try to identify the plants and discover what animals live or depend on these plants for a source of food or shelter.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Sewage Disposal

PROBLEM: Go on a field trip to your city's sewage disposal plant to learn how sewage is treated and disposed of.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Sewage Disposal

PROBLEM: Talk with a person in the Soil Conservation Service to learn how rural and suburban family homes not connected to a municipal service handle sewage disposal and some of the problems involved.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Soil

PROBLEM: Locate a soil profile in the community and measure the depth of layers and describe each layer's characteristics.

Field Research of Environmental Topics

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Vacant Lot Communities

PROBLEM: Observe and study a vacant lot or field for types of plant and animal species to be found there. Look for signs of change occurring in the plant life.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Waste Disposal

PROBLEM: Visit the sanitary land fill area to learn how your city disposes of wastes, the amounts deposited daily, and the size of the area need for daily disposal of wastes.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Water Communities

PROBLEM: Observe and study a pond, creek, or lake to learn the types of plant and animal life living there. Watch for evidence of interactions in the community and evidences of pollution or other forces that may upset the natural balance of the community.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Water Treatment

PROBLEM: Visit the water treatment plant to learn how your city obtains water and insures the purity of the water.

ENCOUNTER ACTIVITY: Field Research in Rural or Urban Areas

TOPIC: Wetland Communities

PROBLEM: Observe and study a marsh, bog, or swamp to learn the types of plant and animal life living there. Watch for evidence of interactions in the community. Look for possible pollution sources or other forces that may upset the natural balance of the community.

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Investigate to detect the presence of carbon monoxide.

MATERIALS: carbon monoxide indicator material (tan buttons or the sheet in Envirco Kit cut into small sections)

PROCEDURES Place the carbon monoxide indicator near a suspected source of carbon monoxide such as a stove, furnace, hot water heater, outdoors by chimneys, in the garage, or inside the car. Record the time The presence of carbon monoxide will cause the indicator to darken, even turn black, indicating a large volume of this poisonous gas in 15 minutes or less.

Exposing the indicator to pure air may drive out the carbon monoxide fumes (unless it has turned black) and then it may be reused.

Envirco pp. 23-24

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Find out if there is sulphur dioxide present in areas around the home.

MATERIALS: potassium permanganate
aluminum dishes

PROCEDURES

Put some potassium permanganate solution in aluminum dishes. Place these around the home and yard, wherever you think sulfur dioxide may be present. These reactions will take a longer time, even several days. Add a little water to the dishes if the solutions dry out. Make careful notes on the changes in color and time required for each noticeable fading. If a color fading is noted in less than a day, report the area and probable source to your parents. It may indicate faulty combustion in your stove or furnace if detected in these locations.

Envirco p. 21-22

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Test for the presence of aldehydes in cigarette smoke.

MATERIALS: Adult assistance required
MBHH (3 methyl-2 benzothiazolinone hydrazone hydrochloride)
ferric chloride solution
two pieces filter paper
cigarette smoke (adult)

PROCEDURES Put two drops of MBHH on each filter paper. Have an adult blow cigarette smoke on one of the drops. Wait one minute, but don't allow it to dry. Add a drop of ferric chloride to each spot of MBHH. A blue-green color indicates the presence of aldehydes.

Envirco p. 19

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: What type of pollutant is common to the air in the home?

MATERIALS: flashlight or projector
vacuum cleaner
filter paper
magnifying glass

PROCEDURES

Darken the room and aim the beam of light at a wall. Estimate the density of the particles in one room, then make visual comparisons in other rooms in your home.

Tape a piece of filter paper over the end of the vacuum cleaner tube. After the cleaner has been turned on for a while and moved through the air examine the particles collected with a magnifying glass.

If your home heating system has a filter, look at it carefully next time it is changed. The amount of material trapped between the fibers indicates the air-borne particles the system has removed from the air in your home.

Envirco p.14

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Can certain acids (sufuric acid) in the air cause a corrosive action to nylon fabric?

MATERIALS: pieces of nylon cloth
wire coat hangers
straight pins
plastic wrapping material

PROCEDURES
Stretch pieces of nylon cloth over wire coat hangers. Keep one piece wrapped in plstic as a control. Place wire hangers in various locations in the home, school, or yard near sources of exhaust (furnace, stove, driveway). Check after several weeks to see if nylon is beginning to rot.

Envirco p. 22-23

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: What amounts of visual pollutants are to be found in smoke?

Adult assistance required
MATERIALS: plastic tube cotton
¼ teaspoon silica gel
2 corks
2 straws (cut in half for repeat use)

PROCEDURES
Stuff cotton loosely in one end of the tube and put a cork and straw in it. Put ¼ teaspoon of silica gel in the other end, then insert cotton and other cork and straw. Have an adult blow cigarette smoke into a straw at one end of apparatus several times. You will note that the cotton has become discolored. Remove the cotton and silica gel and place on paper. Examine the materials with your magnifying glass. Estimate the amount of particles collected. Smell of the cotton. Could the lungs of man be like the tube smoke trap?

This experiment may be performed any place smoke is exhausted. To allow the smoke a larger path through the tube, don't use the corks and straws. The cotton at either end of the plastic tube will hold the silica gel in place. Check the fumes from the stove, furnace, incinerator, or place the smoke trap in an auto exhaust pipe with the supervision of an adult.

Envirco p. 12-13

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Can certain air pollutants cause dyed fabrics to fade?

MATERIALS: pieces of brightly colored cloth
wire coat hangers
straight pins
plastic wrapping material

PROCEDURES

Cut an old, brightly colored garment into squares. Pin the fabric and stretch over a coat hanger. Wrap another piece of cloth in plastic and store in a cool, dark place as a control. Hang the cloth covered hanger outdoors, away from the direct sun light. Compare each sample at regular time periods.

Envirco p. 20

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Are there particles that can be removed from the air?

MATERIALS: plastic microscope slides
glycerine
petroleum jelly or silicone grease
masking tape

PROCEDURES

Cut plastic sheets into two 1x3 inch microscope slides. Coat them with a very thin film of glycerine, petroleum jelly or silicone grease on one side.

Tape one of the slides to a corner of the picture tube of your television set and the other to the vertical woodwork, wall or a window on the opposite side of the room. It is the same principle as a magnet picking up nails. In this case the moving electrons in the set attract small airborne particles. Check the slides with the magnifying glass to get an idea of how many particles have been collected on each.

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Investigation of Environmental Topics by Experimental Research

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Investigating the purity of air for particulate matter.

MATERIALS: plastic microscope slides
glycerine, petroleum jelly or silicone grease
masking tape

PROCEDURES

Cut plastic sheets into 1x3 inch microscope slides. Coat them with a very thin film of glycerine or other coating on one side. Place one of them on the corner of a room air conditioner to observe the particles an air conditioner removes from room air. Place other slides around the home and compare the relative purity of the air in various parts of the house. Place some slides in the same manner around the yard or neighborhood several feet above the ground to prevent an undue collection of surface dust stirred up by breezes.

Envirco p. 16

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: How can sulphur dioxide be detected?

MATERIALS: Adult assistance required
potassium permanganate solution
cigarette smoke
two test tubes

PROCEDURES

Into each of two test tubes, add 15 drops of potassium permanganate solution. Set aside one test tube for the control. It will be used only for color comparisons.

Have an adult blow smoke into one test tube. Trap the smoke in the solution by placing a finger over the opening. Gradually turn several times to allow the solution to absorb the smoke. Compare with the control test tube. A faded color indicates the presence of sulfur dioxide, a deadly gas.

Using another clean test tube, add the solution as before. Have an adult drop a match just as quickly as it bursts into flame into the tube and cover the tube immediately. Observe.

Envirco p. 21

Investigation of Environmental Topics by Experimental Research

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Test for carbon monoxide in cigarette smoke.

MATERIALS: Adult assistance required
cuprous chloride in hydrochloric acid in covered bottle
copper wires
cigarette smoke

PROCEDURES

In a cuprous chloride hydrochloric acid solution in which copper wires are immersed, blow smoke into the bottle and cover immediately. This must be done CAREFULLY by an adult. In a few minutes note the solution. A brown color indicates the presence of carbon monoxide. The solution will soon clear completely because the copper wires in the solution will absorb the carbon monoxide. The experiment can then be repeated after the solution becomes colorless.

Envirco p. 24

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Can air pollutants harm our possessions?

MATERIALS: nylon stocking
jar
dilute hydrochloric acid
magnifying glass

PROCEDURES

Place a piece of nylon stocking in a jar and spray it with very dilute hydrochloric acid. Examine with a hand magnifying glass.

What caused the nylon to disintegrate?
Could this acid be one of the air pollutants?
Where would it be likely to come from?

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: What is the effect of sulfur dioxide on trees?

MATERIALS: pine tree needles
magnifying glass

PROCEDURES

Collect needles from a pine tree and examine them with the magnifying glass. If sulfur dioxide has damaged the tree, the needles will have three bands around them. They will be yellow, brown, and yellow in that order.

Label your samples from the first test and store them in an envelope. Conduct a series of these experiments over a period of time, using the same pine tree. This may indicate a build-up of sulfur dioxide which can gradually kill the tree.

Envirco p. 23

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: What amounts of visual pollutants are to be found in smoke?

Adult assistance required

MATERIALS: plastic tube
cotton
¼ teaspoon silica gel
2 corks
2 straws (cut in half for repeat use)

PROCEDURES

Stuff cotton loosely in one end of the tube and put a cork and straw in it. Put ¼ teaspoon of silica gel in the other end, then insert cotton and other cork and straw. Have an adult blow cigarette smoke into a straw at one end of apparatus several times. You will not that the cotton has become discolored. Remove the cotton and silica gel and place on paper. Examine the materials with your magnifying glass. Estimate the amount of particles collected. Smell of the cotton. Could the lungs of man be like the tube smoke trap?

This experiment may be performed any place smoke is exhausted. To allow the smoke a larger path through the tube, don't use the

over

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: Test for the presence of aldehydes in gasoline.

Adult assistance required

MATERIALS: filter paper
MBHH (3 methyl-2 benzothiazolinone hydrazone hydrochloride)
ferric chloride, added to water
aldehyde scale (Envirco booklet)

PROCEDURES

Put drops of MBHH on a piece of filter paper. Tape the filter paper over the end of the exhaust pipe of an auto before the engine is started. After the engine has run for a short time and then been shut off, remove the exposed paper, and check for aldehyde pollution with the ferric chloride solution. If the blue-green color is very faint, fewer aldehydes are present showing that the motor is tuned properly.

Envirco p. 19

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: What type of pollutant is common to the air in the home?

MATERIALS: flashlight or projector
vacuum cleaner
filter paper
magnifying glass

PROCEDURES

Darken the room and aim the beam of light at a wall. Estimate the density of the particles in one room, then make

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: How can ozone be detected?

MATERIALS: cardboard box
piece of rubber or a rubber band
small weight
magnifying glass

PROCEDURES

Cut slits in the side of the box to permit air movement. Attach the rubber band to the top of the box with a staple. Place the weight on the other end of the strip to stretch the rubber. Place the box in a position so the sun's rays can't strike the rubber. Examine after seven days with a magnifying glass. Look for cracking which indicates the presence of ozone.

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: What is smog?

MATERIALS: half-gallon jar
match

PROCEDURES

Drop a burning match into a clear half-gallon jar to produce a little smoke. Blow hard into the bottle with your mouth pressed tightly on the mouth of the bottle. Release quickly. Smog is produced by a combination of _____ and _____. Can you think of a way this could happen in your environment?

Investigation of Environmental Topics by Experimental Research

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Air Pollution

PROBLEM: What type of pollutant is common to the air in the home?

MATERIALS: boiled potatos (sliced)
foil or wax paper
aluminum dishes
magnifying glass

PROCEDURES

Boil a potatoe. Cut the potatoe into thin slices. Wrap a slice and place in the refrigerator as a control. Place the other slices in a dish and place the dishes in all rooms of your home. Check each slice with a magnifying glass after a few days and continue checking over a period of weeks. Chart and compare the results.

Envirco p. 15

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Erosion

PROBLEM: What are the effects from land erosion?

MATERIALS: newsprint
two boxes (tissue or shoe box)
soil, sod (grass covered soil)
medicine dropper
glasses (3)

PROCEDURES

Place two large pieces of newsprint on the table. Fill one box with bare, dry soil and the other box with grassy sod. Stand on the table and drop water on the bare soil with a medicine dropper. Note the splash pattern of the bits of soil on the newsprint. Repeat the action, dropping water on the grassy area. What difference do you observe with the grassy sod?

Cut a V on the front edge of each box. Have someone hold an empty glass under the V of the bare soil box. Tilt the back end of the box to simulate a hillside. Pour a half glass of water on the soil, and catch the runoff in the glass under the V.

Repeat with the grassed soil. Compare the runoff in the two glasses. Record your observation.

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Soil

PROBLEM: How is soil formed from the forces of the sun and cold temperatures?

MATERIALS: limestone
hot plate
pan of ice water

PROCEDURES

Heat a small piece of limestone over a flame or on a hot plate (covered with foil or metal dish). Drop it quickly into a pan of ice water. Observe the rock to note changes as it contracts after expansion by heating. How might soil be formed in nature by natural processes?

PA 341 p. 2
U. S. Dept. of Agriculture
Soil Conservation Service

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Soil

PROBLEM: How is soil formed from the forces of cold temperatures?

MATERIALS: small glass jar with a cover (jelly jar)
water

PROCEDURES

Fill s small glass jar with water and cap it tightly. Let if freeze outdoors or in the freezing compartment of a refrigerator. Note what happens to the jar. What similar process occurs in nature? How does this process contribute to soil formation?

PA 341 p. 2
Soil Conservation Service
U. S. Dept. of Agriculture

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Soil

PROBLEM: How are different kinds of material affected by living organisms in the soil?

MATERIALS: three clay pots filled with soil
small piece of cotton fabric, paper, and plastic bag

PROCEDURES

Bury each piece of sample material in a separate pot of soil. Label pots carefully. Dig up materials and examine them in one week, and at regular intervals after that. Record your findings. Which material is attacked by the living organisms in the soil? Which isn't?

Envirco pp. 33-34

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Soil

PROBLEM: How is soil formed from the action of acids on rocks?

MATERIALS: limestone
vinegar
hot plate

PROCEDURES

Put some small pieces of limestone in a little vinegar. Heat the vinegar on a hot plate or over a burner and notice how bubbles form on the pieces of stone. These bubbles are carbon dioxide gas made from carbon and oxygen released from the limestone by a chemical change in the rock caused by the acid in the vinegar. If you continued this process long enough, all the limestone would gradually break down.

PA 341 P. 2
Soil Conservation Ser.
Dept. of Agric.

Investigation of Environmental Topics by Experimental Research

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Soil

PROBLEM: How can the acidity or alkalinity of soil be tested?

MATERIALS: soil samples from garden,etc. PH scale
test tubes
universal indicator
aluminum dishes

PROCEDURES

Collect soil samples from the garden, the lawn, flower pots, or from any spot where plants or grass do not seem healthy. Label the samples carefully, keeping a record of where they were obtained.

Place a small amount of the soil sample in a test tube. Half fill the test tube with water that has tested neutral with the PH scale (distilled water), add 5 drops of universal indicator, and shake until the soil has been thoroughly mixed with the water. Allow the soil to settle. It could take several hours. Prepare a control for comparison by adding 5 drops of universal indicator to half a test tube of neutral water and set this aside.

When the soil has settled, check for PH by matching the transparent liquid above the soil against the PH chart. After you've tested the PH of soil samples, pour them into aluminum dishes and allow the liquid to slowly evaporate. When the particles are dry, and perhaps a week has passed, examine them with the magnifying glass. If any mold has started to grow, the soil is very poor and strongly alkaline.

Envirco pp.38-39

Investigation of Environmental Topics by Experimental Research

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Soil

PROBLEM: Can chemicals destroy soil microorganisms?

MATERIALS: Adult assistance required
two clay flower pots with saucers, filled with garden soil
chlorine bleach
paper

PROCEDURES

Have an adult help you pour half a cup of chlorine household bleach over the entire top surface of the soil in one of the pots. Allow the bleach to percolate through the soil and out through the hole in the bottom of the pot, catching it in a saucer or other container. Dispose of it carefully. Label the pot. Label the other pot as the control.

When the soil has dried, bury two pieces of paper in each. After one week, examine both pieces, and at regular periods after that. Keep soils moist.

Microscopic organisms - mostly bacteria - are essential to the formation and release of chemicals needed by plants. They attack materials in the soil, breaking them apart into smaller pieces that can be used by the plants in their growth.

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Soil

PROBLEM: How is soil formed from rocks?

MATERIALS: two pieces of limestone or sandstone
(if these are not available, use pieces of building bricks or concrete.)

PROCEDURES

Rub two pieces of limestone together over a piece of white paper. Time yourself for one minute and measure the amount you have obtained. How would this compare to nature and the formation of soil? What forces in nature would form soil particles?

PA 341 p.2
Soil Conservation Service
Dept. of Agriculture

Investigation of Environmental Topics by Experimental Research

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Waste Disposal

PROBLEM: What happens to different kinds of materials buried in soil?

MATERIALS:
- shoe boxes
- soil
- plastic
- items such as hair clip, piece of plastic, aluminum foil, newspaper, tooth picks, etc.
- tongs
- candle

PROCEDURES

Line shoe boxes with plastic and half fill with soil. Plant two identical rows (the long way) with four items each. Use different items in each shoe box. Identify each buried item with a tag on a toothpick. Keep the soil slightly damp at all times.

At the end of a week, dig one row in each box, and record answers to these questions. Which materials showed signs of wearing down? Which materials are biodegradable? Which ones could pollute the landscape indefinitely? At the end of the second week, dig up the second row in each box and record observations.

Take all materials that did not show signs of deterioration in the soil and hold each with a tongs over a candle flame. Observe which materials burn, do not burn, give off smoke, and give off odor. Which of these make the most desirable and undesirable litter?

Scholastic, Pollution: A Handbook for Teachers

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Water

PROBLEM: Testing water samples for acidity or alkalinity.

MATERIALS:
- test tubes
- universal indicator
- pH scale
- tap or distilled water
- water from suspected polluted source

PROCEDURES

Use two test tubes, each containing five drops of universal indicator. Fill one half full with distilled or tap water and set aside as a control for comparison. Place a small sample of water from a suspected polluted source in the other test tube. Compare the resulting colors of your two test tubes with the pH scale. This will show the degree of acidity (red) or alkalinity (purple) in each sample. Pure water should be neutral, with a color near 7 on the scale. Distilled water should read 7. The scale ranges from 4 to 10 and indicates that a liquid testing 4 to 6.5 is an acid, while 7.5 to 10 is an alkaline compound. Test other products around the home such as soda, salt, vinegar, aspirin, etc.

Envirco pp. 31-33

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Water Pollution

PROBLEM: Compare the effects of common paper and plastic with those of water soluble paper and plastic in water.

MATERIALS:
- two water glasses
- test tube
- universal indicator
- water soluble paper and plastic
- regular paper and plastic

PROCEDURES

Fill two glasses with water and check their PH with the universal indicator. Cut a small sample of the soluble paper and a matching sample of regular paper. Drop each sample into a one of the glasses of water and observe each glass . Test the pH of each glass again.

Repeat the experiment using a part of a water soluble plastic and a matching sized piece of ordinary plastic. Observe and check the pH of the water of each glass.

Envirco p. 34

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Water Pollution

PROBLEM: How much visible particulate matter can be found in various water samples?

MATERIALS:
- test tubes
- aluminum dishes
- magnifying glass
- tap water or distilled
- water samples from stagnant ponds, stream, river, street gutter after a rain, or other sources. Label each sample, identifying its source and date collected.

PROCEDURES Pour a portion of each sample into the dishes and test tubes. Allow the water to stand until the particles have settled (20 min. or more). Examine the particles with a magnifying glass. Compare the test tube samples with the tap water control sample. Determine the degree of particulate matter in each sample. Record in a chart.

PARTICULATE POLLUTION RECORD

SAMPLE	LOCATION	DATE	PARTICLE CONCENTRATION

Envirco pp 27-28

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Water Pollution

PROBLEM: What happens when fertilizers or detergent phosphates enter ponds or lakes?

MATERIALS:
- two open-mouthed jars filled with pond water
- small amount of fertilizer containing phosphate

PROCEDURES

Add a small amount of fertilizer to one jar of pond water. Leave both jars where they will receive equal amounts of sunlight. Replenish water supply as evaporation lowers the level in the jars. Record the results carefully.

Envirco p. 36

Investigation of Environmental Topics
by Experimental Research

ENCOUNTER ACTIVITY: Experiments and Investigations

TOPIC: Water Pollution

PROBLEM: Removing visible particulate pollutants from polluted water.

MATERIALS: ¼ teaspoon activated charcoal
eye dropper
2 test tubes
sample of dirty water from possible polluted source
funnel
filter paper

PROCEDURES

Fill a test tube with clean water for comparing the results of the experiment. Put ¼ teaspoon of charcoal into a bottle with the dirty water. Shake 50 times. Fold a circular fifter paper as directed: 1) Fold paper to form half circle, 2) fold again to make quarter circle, 3) open rounded edge of paper and insert into funnel. Filter paper should cover funnel tightly. Insert funnel into a test tube. Pour the water and charcoal mixture from the bottle into the filter paper. The water collected in the test tube should compare with the control clean water.

Envirco pp. 30-31

ENCOUNTER ACTIVITY: Projects

TOPIC: Air

PROBLEM: Measure the lawn area around your home to determine if the grass provides the necessary oxygen needed for your family. (5 sq. ft. is the area need for each person)

ENCOUNTER ACTIVITY: Projects

TOPIC: Air

PROBLEM: Make a diagram or a shadow box to show the four layers of the atmosphere. Label each layer and tell some characteristics of the layer.

ENCOUNTER ACTIVITY: Projects

TOPIC: Air

PROBLEM: Make a shadow box or use a gallon glass jar to show the percentages of gases in the atmosphere. Hang threads knotted at the ends to illustrate dust particles. Use small slices of labeled sponge to represent water moisture in the air.

ENCOUNTER ACTIVITY: Projects

TOPIC: Air Pollution

PROBLEM: Collect a set of pictures to show conditions in the environment before and after air pollution. Mount the pictures and make a booklet.

ENCOUNTER ACTIVITY: Projects

TOPIC: Air Pollution

PROBLEM: Prepare a bulletin board that will identify the visible and invisible sources of air pollution.

ENCOUNTER ACTIVITY: Projects

TOPIC: Air Pollution

PROBLEM: Make maps that indicate critical areas of air pollution in Wisconsin, the United States, and the World.

ENCOUNTER ACTIVITY: Projects

TOPIC: Animal Habitat

PROBLEM: Collect samples of insects and prepare them for mounting. Make a bulletin board to show which type of environment (open soil, trees, bushes, grassy areas, etc.) is a common habitat for each insect species collected.

ENCOUNTER ACTIVITY: Projects

TOPIC: Biomes

PROBLEM: Construct a shoe box diarama of one of the North American biomes. Use paper sculpture, clay, or other materials for plant and animal species commonly found in the biome.

ENCOUNTER ACTIVITY: Projects

TOPIC: Conserving Resources

PROBLEM: Enlist the cooperation of several households to collect and save "junk mail" for a period of time to determine the paper that could be saved.

ENCOUNTER ACTIVITY: Projects

TOPIC: Conserving Resources

PROBLEMS: Collect and save for a period of time the extra or unnecessary packaging material from store purchases. Set up a display, bulletin board, or make posters to call attention to the waste of resources.

ENCOUNTER ACTIVITY: Projects

TOPIC: Ecosystems

PROBLEM: Establish a balanced aquarium in a covered gallon jar with one or two guppies.

ENCOUNTER ACTIVITY: Projects

TOPIC: Ecosystems

PROBLEM: Establish a balanced terrarium with a small animal, plants, soil, rocks, and other items.

ENCOUNTER ACTIVITY: Projects

TOPIC: Ecosystems

PROBLEM: Draw and paint a mural of a wildlife area, a rural area, or an urban area to show the plant and animal species living in each area. Label each type of species.

ENCOUNTER ACTIVITY: Projects

TOPIC: Ecosystems

PROBLEM: Make a drawing to show how plants, animals, and decomposers are all dependent on one another.

ENCOUNTER ACTIVITY: Projects

TOPIC: Environmental Concern

PROBLEM: Collect ads for modern conveniences and pair with pictures of the environmental impact or destruction caused by mines or other steps in the production of the convenient gadget.

ENCOUNTER ACTIVITY: Projects

TOPIC: Environmental Vocabulary

PROBLEM: Make an environmental dictionary for a particular study such as ecosystems. If possible, include drawings or pictures.

ENCOUNTER ACTIVITY: Projects

TOPIC: Environmental Impact

PROBLEM: Learn the location of your community's water supply, sewage disposal plant, sanitary land fill, and water shed. Obtain a community area map or draw your own map and and show these locations. List advantages and disadvantages of these locations for the people of the community and the impact on the environment.

ENCOUNTER ACTIVITY: Projects

TOPIC: Environmental Planning

PROBLEM: Build a model of an ideal community with an industrial area, a business section, schools and other public facilities, and residential areas.

ENCOUNTER ACTIVITY: Projects

TOPIC: Littering

PROBLEM: Make a set of anti-littering posters.

ENCOUNTER ACTIVITY: Projects

TOPIC: Mineral Resources

PROBLEM: Construct a chart of minerals with the headings of Metallic Minerals, Non-Metallic Minerals, and Mineral Fuels. Use small examples or replicas of each mineral. Pictures or drawings could also be used. Tell an important use of each mineral and indicate whether it is renewable or non-renewable.

ENCOUNTER ACTIVITY: Projects

TOPIC: Natural Resources

PROBLEM: Collect pictures of natural resources and mount the pictures to make a booklet. Write a caption with each picture to tell how the resource is used.

ENCOUNTER ACTIVITY: Projects

TOPIC: Plants

PROBLEM: Make a drawing to show that plants are at the base of a triangle as food supplies for animals.

ENCOUNTER ACTIVITY: Projects

TOPIC: Recycling

PROBLEM: Make a set of posters to urge people to save items that can be recycled.

ENCOUNTER ACTIVITY: Projects

TOPIC: Recycling

PROBLEM: Collect holiday cards such as Christmas, Valentine's Day, and Easter. Send to one of these organizations that will reuse the cards in some project, or one that you know.

Occupational Therapy Dept.
Abbott Hospital
Bushnell Building No. 1
110 East 18th Street
Minneapolis, MN 55403

Activities Department
Ebenezer Home
2545 Portland Avenue
Minneapolis, MN 55404

Activities Department
Minneapolis Masonic Home & Care Center
11400 Normandale Blvd.
Bloomington, MN 55431

ENCOUNTER ACTIVITY: Projects

TOPIC: Soil

PROBLEM: Construct a replica of a soil profile with a glass front or glue samples to a board to show the layers of soil and label each layer.

ENCOUNTER ACTIVITY: Projects

TOPIC: Soil

PROBLEM: Collect a sample of surface soil and subsoil (about 10 inches down) from several locations. Label each sample. List similarities and differences of each sample as compared with the others.

ENCOUNTER ACTIVITY: Projects

TOPIC: Waste Disposal

PROBLEM: Construct a graph to show how man has increased the quantity of trash over a period of years.

ENCOUNTER ACTIVITY: Projects

TOPIC: Water

PROBLEM: Construct a diarama of the hydrologic cycle to show how water evaporates, condenses, and falls as precipitation.

ENCOUNTER ACTIVITY: Projects

TOPIC: Water

PROBLEM: Make a labeled drawing or a model of a water shed.

ENCOUNTER ACTIVITY: Projects

TOPIC: Water

PROBLEM: Make a labeled drawing or a model of the hydrologic cycle.

ENCOUNTER ACTIVITY: Projects

TOPIC: Water

PROBLEM: Make a labeled drawing or a model of a water treatment plant.

ENCOUNTER ACTIVITY: Projects

TOPIC: Water

PROBLEM: Make a graph to show the amount of water used daily by an individual, an average home, and a business or industry.

ENCOUNTER ACTIVITY: Projects

TOPIC: Water Pollution

PROBLEM: Collect a set of pictures to show conditions in the environment before and after water pollution. Mount the pictures and make a booklet.

ENCOUNTER ACTIVITY: Projects

TOPIC: Wildlife

PROBLEM: Label a map of the United States to show the location of wildlife refuges.

ENCOUNTER ACTIVITY: Projects

TOPIC: Wildlife

PROBLEM: Draw pictures of extinct species of wildlife. Write a caption for each picture telling the habitat and the cause for extinction. Compile in a booklet form.

ENCOUNTER ACTIVITY: Projects

TOPIC: Wildlife

PROBLEM: Draw pictures of endangered wildlife and write a caption telling the habitat, food, and protection needed to preserve the species. Compile in a booklet form.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Air

PROBLEM: Conduct a questionaire survey to determine if people in our community would be willing to lessen the air pollution from car emissions by walking, riding bikes, riding the bus, forming car pools, and other suggestions.

TOPIC: Energy

PROBLEM: Prepare a questionaire listing examples of unnecessary electrical gadgets such as electric toothbrushes to determine how many homes have them, how often they are used by the family members, and if they would be willing to do without them to conserve energy sources.

TOPIC: Insecticides

PROBLEM: Take a survey to determine whether people feel insecticides like DDT and other chlorinated hydrocarbons are harmful to the soil and its animal life, and higher animal forms that eat the soil animals.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Insecticides

PROBLEM: Conduct a survey to learn whether people favor the use of herbicide spraying or planting and trimming as a means of controlling vegetation along highways.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Mineral Mining

PROBLEM: Take a survey to determine if people think that surface mining companies should restore the land and vegetation in an area as the mining is completed.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Pesticides

PROBLEM: Survey a store shelf to determine which brands of insecticide and herbicide products contain safer chemicals to control insects and plant diseases.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Phosphates

PROBLEM: Take a survey to learn how many homes use dishwashing and laundry detergents with high phosphate levels. Ask if they think phosphate products cause harmful effects to the environment.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Recycling

PROBLEM: Prepare a questionaire to learn how many homes in your neighborhood have the safer brands of insecticide and herbicide products.

Surveys of Environmental Problems and Topics

TOPIC: Recycling

PROBLEM: Conduct a survey to learn if people in our community are willing to save aluminum cans and glass bottles. Will they take them to a recycling station?

ENCOUNTER ACTIVITY: Surveys

TOPIC: Recycling

PROBLEM: Interview a representative from a soft drink firm such as Cocoa-Cola to make a comparison of the sale of cans, non-returnables, and reuseable glass bottles.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Recycling

PROBLEM: Prepare a questionaire to learn how many families in your neighborhood usually buy soft drinks in cans, in non-returnables, or in glass bottles.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Water Conservation

PROBLEM: Take a survey of twenty homes in your neighborhood and ask if there is a leaky faucet in the house.

Surveys of Environmental Problems and Topics

ENCOUNTER ACTIVITY: Surveys

TOPIC: Water Conservation

PROBLEM: Conduct a survey to determine people's habits regarding the wasting of water. Examples might be letting the water run while brushing teeth, peeling vegetables under running water, allowing leaky faucet and hoses to drip, etc.

ENCOUNTER ACTIVITY: Surveys

TOPIC: Wildlife

PROBLEM: Conduct a survey to determine public attitudes toward paying bounties on predatory animals such as the fox.

TOPIC: Wildlife

PROBLEM: Develop a questionaire to determine if people know which species of wildlife are endangered.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Air Pollution

PROBLEM: Find and review information presented by commuication media that alerts people to the hazards of air pollution and suggests solutions to the problem.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Air Pollution

PROBLEM: Find an advertisement that shows concern by the manufacturer to control air pollution.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Energy

PROBLEM: Listen for radio advertisements that promote concern for conserving energy supplies.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Energy

PROBLEM: Find and review information presented by communication media to interest people in conserving electrical energy.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Environmental Careers

PROBLEM: Find and review information presented by communication media to interest people in environmental careers.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Environmental Harmony

PROBLEM: Find advertisements for products or activities that conflict with the environmental harmony.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Environmental Harmony

PROBLEM: Find advertisements for products or activities that indicate their use is in harmony with the environment.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Environmental Problems

PROBLEM: Review newspaper articles over a three week period to determine the types of problems people are alerted to in their community.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Minerals

PROBLEM: Find and review information presented by communication media that show concern for management and control of offshore oil drilling because of harmful effects from spills and accidents.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Minerals

PROBLEM: Find and review various types of communication media for those that inform the public of the minerals that are in danger of depletion.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Minerals

PROBLEM: Locate a newspaper article that shows concern for the destruction of the landscape from surface mineral mining.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Noise Pollution

PROBLEM: Locate a newspaper or magazine article that alerts people to the hazards of loud noises such as aircraft, machinery, and the like.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Pesticides

PROBLEM: Find and review information presented by communication media that informs people of the hazards of using some types of insecticides.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Plants

PROBLEM: Locate an article in a newspaper or magazine that tells the importance of plants in the prevention of soil erosion.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Recycling

PROBLEM: Find and review newspaper or magazine articles that encourage the recycling of materials.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Water

PROBLEM: Find an advertisement that shows concern by the manufacturer to control pollution of water.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Wildlife

PROBLEM: Collect newspaper articles that inform the people about endangered species of animals that need environmental protection.

ENCOUNTER ACTIVITY: Social Awareness

TOPIC: Wildlife Preservation

PROBLEM: List the television programs in a four week period that are concerned with preserving wildlife. View at least one program to learn how the program would make people aware of the need and desirability to protect and preserve wildlife. Consult TV Guide or another source to plan program viewing.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Air

PROBLEM: Learn what standards were established for motor vehicle emissions in the passage of the National Emissions Standards Act of 1967.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Air

PROBLEM: Learn how the Clean Air Act of 1965 started a program of prevention and control of air pollution.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Air

PROBLEM: Learn the standards of the Clean Air Amendments of 1970 established for motor vehicle emissions.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Air Pollution

PROBLEM: Learn what regulations and controls were added in the Clean Air Amendments of 1970 to promote air pollution control programs.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Air Pollution

PROBLEM: Learn what local ordinances state regarding the control of air pollution in the city and surrounding area.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Environmental Attitudes

PROBLEM: Write to a candidate seeking an elected vacancy to learn where he stands on environmental issues such as air pollution, water pollution, and wildlife habitat protection.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Environmental Attitudes

PROBLEM: Write to a representative and tell as clearly as you can how you feel about a particular environmental subject and why you feel that way.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Environmental Concern

PROBLEM: Learn how the Environmental Education Act of 1970 will encourage programs and activities to help students learn about the environment and ecology.

ENVIRONMENTAL ACTIVITY: Political Actions

TOPIC: Environmental Quality

PROBLEM: Learn in what ways the Environmental Quality Improvement Act of 1970 provides a better quality of environment for people.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Environmental Quality

PROBLEM: Learn what policies and standards were established to promote harmony between man and his environment by the National Environmental Policy Act of 1969.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Environmental Quality

PROBLEM: What were the objectives of the UN Conference on Human Environment held in Stockholm, Sweden in June, 1972?

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Insecticides

PROBLEM: Write to a state congressman to request information of laws or regulations regarding the use of insecticides such as DDT in Wisconsin.

ENCOUNTER ACTIVITY: Politcal Actions

TOPIC: Insecticides

PROBLEM: Write to a U.S. Senator from your state to request information of laws or regulations regarding the use of insecticides such as DDT in the nation.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Land Use

PROBLEM: Write to a state representative to learn if there are regulations to designate the way land can be used in our state.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Littering

PROBLEM: Learn what the law states concerning littering of state highways, county highways, town roads, and city streets.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Mineral Mining

PROBLEM: Write to a state congressman to learn what legislation has been passed in our state to regulate and control mining operations.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Natural Resources

PROBLEM: Learn what guidelines are established by the National Materials Policy Act of 1970 for the supply, use, recovery, and disposal of materials.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Natural Resources

PROBLEM: Write to the Commissioner of Natural Resources in your state to learn his goals and responsibilities for management of natural resources.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Noise Pollution

PROBLEM: Learn if your city has any restrictions to control the level of noise for its citizens.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Noise Pollution

PROBLEM: Write to a National Congressional Representative to learn if there has been any legislation proposed or passed to regulate the level of noise permitted in urban areas.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Plants

PROBLEM: Learn which plants are considered weeds, obnoxious, and controlled by local ordinances.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Recycling

PROBLEM: Write to a state representative to learn if there is financial aid available to help communities set up recycling stations.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Sewage Disposal

PROBLEM: Write to the Department of Natural Resources to learn what regulations exist for treating municipal sewage.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Waste Disposal

PROBLEM: Learn what guidelines the Solid Waste Disposal Act of 1965 established for disposal of solid wastes.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Waste Disposal

PROBLEM: Learn what the Resource Recovery Act of 1970 stated about methods of collection, separation, recovery, and recycling of solid wastes.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Waste Disposal

PROBLEM: Learn what the Refuse Act of 1899 said about getting rid of waste materials.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Water

PROBLEM: Learn what amendments were added in 1970 to the Federal Water Pollution Act of 1965.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Water

PROBLEM: Learn what guidelines were established in the Federal Water Pollution Act of 1965 to prevent and control water pollution.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Water

PROBLEM: Write to the Dept. of Natural Resources to learn actions that are being taken to keep rivers and lakes from becoming polluted.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Water Disposal

PROBLEM: Write to a state representative to learn what regulations exist for developing a sanitary land fill, such as location of the site, size of the area, and depth of coverage on the wastes.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Water Pollution

PROBLEM: Write to a district state congressional representative to learn what action has been taken to curb pollution of the Fox River in Wisconsin.

ENCOUNTER ACTIVITY: Political Actions

TOPIC: Water Pollution

PROBLEM: Learn what your city has done to prevent water pollution through local ordinances or legislation.

Environmental Action Groups

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: American Forestry Association

ADDRESS: 919 Seventeenth Street N. W.
Washington, D. C. 20006

PUBLICATIONS:

American Forests

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: American Sociological Association

ADDRESS: 1001 Connecticut Ave. N.W.
Washington, D.C. 20036

PUBLICATIONS:

Produces units on population for teachers.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Animal Welfare Institute

ADDRESS: P.O. Box 3492
Grand Central Station
New York, N.Y. 10017

PUBLICATIONS:

Publication on use and care of animals in classroom.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Citizens for Clean Air

ADDRESS: 40 W. 57th Street
New York, N.Y. 10019

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Conservation Foundation

ADDRESS: 1250 Connecticut Avenue, N.W.
Washington, D.C. 20036

PUBLICATIONS:

Monthly newsletter

Conducts research, information, and education programs.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Council on Environmental Quality (CEQ)

ADDRESS:

PUBLICATIONS:

Advisor to the President on environmental matters.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Defenders of Wildlife

ADDRESS: 1346 Connecticut Avenue N.W.
Washington, D.C.

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Department of Agriculture

ADDRESS: Washington, D.C. 20250

PUBLICATIONS:

Agricultural Research Service

Research in soil and water conservation, pest control.

ENCOUNTER ACTIVITY: Action Agency

AGENCY: Department of Agriculture

ADDRESS: Washington, D.C. 20250

PUBLICATIONS:

Soil Conservation Service

Provides technical assistance in optimum land use.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Department of Agriculture

ADDRESS: Washington, D.C. 20250

PUBLICATIONS:

Forest Service

Manages National Forests & grassland. Conducts research, offers technical and financial aid.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Department of Agriculture

ADDRESS:

Washington, D.C. 20250

PUBLICATIONS:

Agricultural Stabilization and Conservation Service

Administers land conservation programs.

Environmental Action Groups

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Department of Agriculture

ADDRESS: Washington, D.C. 20250

PUBLICATIONS:

Federal Extension Service

Responsible for all general education programs. Field agents act as liaison between departmental research and action agencies.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Department of Natural Resources

ADDRESS: 4610 University Avenue Box 450
Madison, Wisconsin 53701

1300 W. Clairemont Ave.
Eau Claire, Wis. 54701

PUBLICATIONS:

Division of Environmental Protection
Division of Forestry and Recreation
Division of Air Pollution Control Bureau

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Ecology Center

ADDRESS: 2179 Allston Way
Berkeley, California 94704

PUBLICATIONS:

Provides books, pamphlets, posters, reprints, and information on ecology action projects.

ENCOUNTER ACTIVITY: Action Agency

AGENCY: Environment Wisconsin

ADDRESS: 114 N. Carroll Street
Madison, Wisconsin 53705

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Environmental Defense Fund

ADDRESS: P.O. Drawer 740
Stony Brook, N.Y. 11790

PUBLICATIONS:

national coalition of scientists, lawyers, and citizens who are fighting enroachments upon the environment through legal means.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Environmental Information Center

ADDRESS: 3207 N. Hackett Ave.
Milwaukee, WI. 53211

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agency

AGENCY: Environmental Protection Agency
Minn-Wisc. District Office

ADDRESS:

7401 Lyndale Ave. S.
Minneapolis, Mn 55423

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Environmental Protection Agency (EPA)

ADDRESS: Washington, D.C.

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Fish & Wildlife Service
Interior Department

ADDRESS:
18th and C Street
Washington, D. C.

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Friends of the Earth

ADDRESS: 30 East 42nd Street
New York, N. Y. 10017

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Garden Clubs of America

ADDRESS: 590 Madison Avenue
New York, N. Y. 10022

Promotes beautification, conservation, and open space planning.

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Izaak Walton League

ADDRESS: 1326 Waukegan Road
Glenview, Illinois 60025

Wisconsin Division

P. O. Box 488
Green Bay, WI. 54305

PUBLICATIONS:

Environmental Action Groups

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Keep America Beautiful, Inc.

ADDRESS: 99 Park Avenue
New York, N. Y. 10016

PUBLICATIONS:

Prevention of litter and enhancement of urban and rural scenic beauty.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Man Environmental Communications Center (MEC Center)

ADDRESS: P. O. Box 2189
545 W. Dayton
Madison, WI. 53701

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: National Association of Counties

ADDRESS: Suite 522
1001 Connecticut Avenue, N. W.
Washington, D. C. , 20036

PUBLICATIONS:

Clearinghouse. Publishes materials about parks, air pollution, water pollution, etc.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: National Audubon Service

ADDRESS: 1130 Fifth Avenue
New York, N. Y. 10028

PUBLICATIONS:

Audubon
Teaching Aids
Audubon Ecology Chart
Audubon Study Guide

Environmental Action Groups

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: National Geographic Society

ADDRESS: 17th and M. Streets, N. W.
Washington, D. C. 20036

PUBLICATIONS:

National Geographic

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: National Parks Association

ADDRESS: Washington, D. C. 20009

PUBLICATIONS:

National Parks

conservation library leaflets for school use

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: National Recreation & Park Association

ADDRESS: 1700 Pennsylvania Avenue, N. W.
Washington, D. C. 20006

PUBLICATIONS:

monthly magazine
newsletters
public information programs
research services

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: National Science Foundation

ADDRESS: 1800 G. Street, N. W.
Washington, D. C.

PUBLICATIONS:

includes study of environmental programs

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: National Wildlife Federation

ADDRESS: 1412 Sixteenth St. N. W.
Washington, D. C. 20036

PUBLICATIONS:

National Wildlife

Ranger Rick

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: The Nature Conservancy — Wisconsin Chapter

ADDRESS: 1522 K Street, N. W.
Washington, D. C. 20005

4122 Mineral Point Road
Madison, WI. 53705

PUBLICATIONS:

Nature Conservancy News

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Planned-Parenthood-World Population

ADDRESS: 515 Madison Avenue
New York, N. Y. 10022

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Population Reference Bureau

ADDRESS: 1755 Massachusetts Aven. N. W.
Washington, D. C. 20036

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Save Lake Superior Association
Richard Mihalek

ADDRESS:
Route 1 Box 81
Ashland, Wisconsin 54806

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Science & Mathematics Education Information & Analysis Center (SMAC)

ADDRESS: 1460 West Lane Avenue
Columbus, Ohio 43221

PUBLICATIONS:

Newsletter on environmental education, coordinator Robert Roth

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Scientists' Institute for Public Information

ADDRESS: 30 East 68th Street
New York, N. Y. 10021

PUBLICATIONS:

Coordinates efforts of scientists to provide public with understandable scientific information. Concerned with environmental problems. Professional group.

Environmental Action Groups

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Sierra Club

ADDRESS: 1050 Mills Tower
San Francisco, Calif. 94104

PUBLICATIONS:

Sierra Club Bulletin

Provides films, manuals, exhibits, speakers, conferences, and various publications suitable for schools.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Soil Conservation Society of America
Wisconsin Chapter

ADDRESS: Courthouse, Room 18
Kenosha, WI. 53140

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Water Pollution Control Federation

ADDRESS: 3900 Wisconsin Avenue N. W.
Washington, D. C. 20016

PUBLICATIONS:

Advancement of knowledge on collection, treatment, and disposal of waste waters.

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: The Wilderness Society

ADDRESS: 729 Fifteenth Street N. W.
Washington, D. C. 20005

PUBLICATIONS:

The Living Wilderness

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Wisconsin Conservation Congress

ADDRESS: % Theodore Jaeger
125 2nd Avenue
Park Falls, WI. 54552

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Wisconsin Department of Environmental Health

ADDRESS: 1 West Wilson
Madison, WI.

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Wisconsin Ecological Society

ADDRESS: % John Wilson

Box 514
Green Bay, WI.

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Wisconsin Park & Recreation Assoc.

ADDRESS: 610 Landon Street
230 Lowell Hall
Madison, WI. 53706

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Wisconsin Wildlife Federation

ADDRESS: P. O. Box 7
Mosinee, WI. 54455

PUBLICATIONS:

ENCOUNTER ACTIVITY: Action Agencies

AGENCY: Zero Population Growth

ADDRESS: 367 Gate Street
Los Altos, California 94022

PUBLICATIONS:

Careers Related to Environmental Management

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Conservation

CAREE TITLE: Conservationist

RESOURCES:

1. "Careers for Women in Conservation." Leaflet No. 50, U.S. Dept. of Labor
2. "Careers in Conservation." Soil Conservation Society of America

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Conservation and Management of Wildlife

CAREER TITLE: Wildlife Manager

RESOURCES:

1. "Careers in Wildlife Conservation and Management." Wildlife Management Institute.
2. "A Wildlife Conservation Career for You." Wildlife Society
3. "Wildlife Management and Conservation." James B. Trefethen
4. "So You Want to be a Game Protector."
5. "Careers in Fish and Game Management." The Conservationist
6. "Careers for Women in Forestry." Wildlife Management Option
7. "A Wildlife Management Career in the Forest Service."
8. "Careers in Wildlife Conservation."
9. "Wildlife Specialist Career Brief B-107
10. "A Career for You in the Wildlife Profession."

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Energy

CAREER TITLE: Civil Engineer

RESOURCES:

1. "Civil Engineer." US Dept. of Agriculture.
2. "Mechanical Engineer." US Dept. of Agriculture.
3. "An Engineering Career For You in the Soil Conservation Service." MP No. 715
4. "Engineers in the Forest Service." #1089 US Government Printing

Careers Related to Environmental Management

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Environmental Control

CAREER TITLE: Meteorologist

RESOURCES:

1. "Popeye and Environmental Careers." King Feature Syndicate.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Environmental Health

CAREER TITLE: Life Scientists

RESOURCES:

1. "Popeye and Environmental Careers." King Feature Syndicate.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Environmental Management

CAREER TITLE: City Planner

RESOURCES:

1. Handbook of Job Facts. Science Research Associates.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Environmental Planning

CAREER TITLE: Landscape Architects

RESOURCES:

1. "Landscape Architect." Dept. of Agriculture
2. "An Engineering Career For You in the Soil Conservation Service." MP #715, Government Printing Office.

Careers Related to Environmental Management

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Forestry

CAREER TITLE: Forest Ranger

RESOURCES:

1. "So You Want to be a Forester." The American Forestry Association.
2. "In Your Service." "The Work of Uncle Sam's Forest Rangers." U.S. Dept. of Agriculture, Forest Service.
3. "Popeye and Environment Careers." King Feature Syndicate
4. "Careers in Forestry." U.S. Printing Office.
5. "Should You Be a Forester?" Career Information Service, N.Y. Life Ins. Co.
6. "Careers in Forestry for Women." West Virginia University.
7. "A Job With the Forest Service." U.S. Government Printing Office.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Forestry

CAREER TITLE: Forestry Aide, Technician

RESOURCES:

1. "Popeye and Environmental Careers." King Features Syndicate.
2. "A Job With the Forest Service: A Guide to Nonprofessional Employer." #843, US Dept. of Agriculture.
3. "Forestry Aide." Chronicle Guidance Publications.
4. "Women in theForest Service." US Dept. of Agriculture.
5. "Employment Outlook for Conservation Occupations: Forester, Forestry Aides, Range Managers." Bul. 155-20, US Printing Office.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Forestry

CAREER TITLE: Forest Ranger

RESOURCES:

1. "So You Want to be a Forester." The American Forestry Association.
2. "In Your Service." "The Work of Uncle Sam's Forest Rangers." U.S. Dept. of Agriculture, Forest Service.
3. "Popeye and Environment Careers." King Feature Syndicate
4. "Careers in Forestry." U.S. Printing Office.
5. "Should You Be a Forester?" Career Information Service, N.Y. Life Ins. Co.
6. "Careers in Forestry for Women." West Virginia University.
7. "A Job With the Forest Service." U.S. Government Printing Office.

Careers Related to Environmental Management

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Mineral Mining

CAREER TITLE: Mining Engineer

RESOURCES:

1. "Careers in Mineral Industries." Pennsylvania State University

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Minerals - Off Shore Oil

CAREER TITLE: Petroleum Engineer

RESOURCES:

1. "Career Opportunities in Oil and Gas." Oil and Gas Journal.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Minerals - Off Shore Oil

CAREER TITLE: Petroleum Engineer

RESOURCES:

1. "Career Opportunities in Oil and Gas." Oil and Gas Journal.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Natural Resources

CAREER TITLE: Geologist -

RESOURCES:

1. Careers in Natural Resource Conservation. Frederick W. Herbert.
2. "Careers in Resource Management." U.S. Dept. of Interior.
3. "Careers in Mineral Industries." Pennsylvania State University.

Careers Related to Environmental Management

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Plants

CAREER TITLE: Botanists

RESOURCES:

1. "Popeye and Environmental Careers." King Feature Syndicate
2. "Careers in Bontany." University of Texas

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Range Conservation

CAREER TITLE: Range Manager

RESOURCES:

1. "Popeye and Environmental Careers." King Feature Syndicate.
2. "Range Conservationist." Department of Agriculture.
3. "Preparing for a Career in Range Management." American Society of Range Management.
4. "Career Opportunities in Rangeland Management." American Society of Range Management.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Soil

CAREER TITLE: Agricultural Engineers

RESOURCES:

1. "Careers in Soil and Water Conservation." The Conservationist, 1963.
2. "Your Career in ASCS."
3. "An Engineering Career For You in the Soil Conservation Service."

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Soil

CAREER TITLE: Agricultural Extension Agent

RESOUCES:

1. "Students: Start Your Career in SCS Before You Graduate."
2. "A Soil Science Career For You in SCS."
3. "Careers in Soil Conservation Service."
4. Handbook of Job Facts. Science Research Associates.

Careers Related to Environmental Management

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Soil

CAREER TITLE: Agronomists (Crop and Soil)

RESOURCES:

1. "Soil Scientist." Chronicle Guidance Publications.
2. "A Soil Science Career for You in SCS." MP No. 716.
3. "Soil Conservationist." Chronicle Guidance Publications.

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Waste Water Treatment

CAREER TITLE: Sewage-plant Operator

RESOURCES:

1. "Water Pollution Control Workers." Occupational Outlook Handbook and Quarterly, Dept. of Labor

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Waste Water Treatment

CAREER TITLE: Sewage-plant Operator

RESOURCES:

1. "Water Pollution Control Workers." Occupational Outlook Handbook and Quarterly, Dept. of Labor

Careers Related to Environmental Management

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Water Control

CAREER TITLE: Physical Scientist

RESOURCES:

1. "Popeye and Environmental Careers". King Features Syndicate
2. "Your Career and Clean Water for America" Federal Water Quality Administration
3. "Water Pollution Control Operator". DHEW

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Water Pollution Control

CAREER TITLE: Technician

RESOURCES:

1. "Water Pollution Control Workers." Dept. of Labor
2. "Water Pollution Control Operator." DHEW

ENCOUNTER ACTIVITY: Environmental Careers

TOPIC: Water Pollution Control

CAREER TITLE: Microbiologists

RESOURCES:

1. "Your Career and Clean Water for America." Federal Water Quality Administration.
2. "Careers in Biology." American Institute of Biological Sciences.
3. "Source List for Careers in the Biological Sciences." American Institute of Biological Sciences."
4. "Career Opportunities in Biology." National Academy of Sciences.
5. "Biochemist" Career Brief B101, Largo, Florida.
6. "Biochemist" Brief 132, Chronicle Guidance Publications.
7. "Biologist" Brief 344, Chronicle Guidance Publications.